UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,555	12/05/2003	Delton R. Thompson JR.	56109US011	9972

32692 7590 01/11/2006

3M INNOVATIVE PROPERTIES COMPANY
PO BOX 33427
ST. PAUL, MN 55133-3427

EXAMINER	
BUTLER, PATRICK NEAL	
ART UNIT	**PAPER NUMBER**
1732	

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,555	THOMPSON ET AL.	
	Examiner	Art Unit	
	Patrick Butler	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040517*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

- The formulas provided on pages 10 and 11 appear to be out of place, and a formula referenced at page 11 line 3 is not provided by the disclosure.
- On page 9, line 10, it appears that "are" should be replaced by "is" to have agreement (if corrected, would read "a portion...is not sufficient").

Appropriate correction is required.

The use of the trademarks MODULATED DSC (page 7, line 15 and page 16, line 22) and INSTRON (on page 21, middle paragraph) has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Butin et al. (US Patent No. 3,849,241).

With respect to Claim 1, Butin teaches making melt blown non-woven webs by extruding PET at a temperature of 550 F (288 C), which is less than about 295 C, with a stream of air at 500 F (260 C), which reads on the claimed range of less than about 260 C given the range implied by "about", delivered at a sonic velocity level, which is greater than 100 meters per second, and collecting the filaments into a mat (see abstract; col. 4, lines 31-45; col. 7, lines 59-64; and col. 9, lines 20-23).

While Butin does not detail aspects of the properties of crystallization of the PET, the PET of Butin would necessarily have chain-extended crystallization imparted principally because Butin teaches the same process as applicant.

With respect to Claim 2, Butin teaches that the extruded resin would have about 0.6 to about 1.4 i.v., which reads on the claimed range of 0.45-0.75 i.v. (see col. 2, lines 43-58).

With respect to Claim 3, while Butin does not detail aspects of the properties of crystallization of the PET, the PET of Butin would necessarily exhibit a double melting peak on a DSC plot which is representative of a first molecular portion within the fiber that comprises a non-chain-extended crystalline phase, and a second molecular portion within the fiber that comprises a chain-extended crystalline phase and melts at an elevated temperature over that of the non-chain-extended crystalline phase principally because Butin teaches the same process as applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butin et al. (US Patent No. 3,849,241) as applied above to Claim 1, and further in view of Thompson et al. '081 (US Patent No. 5,841,081).

With respect to Claim 4, Butin teaches making a nonwoven web as previously described.

Butin does not specifically teach that additional fibers or particles are dispersed among the PET fibers before they are collected.

Thompson '081 teaches a method of making a nonwoven web by adding 15 percent or greater heat activatable staple fibers to the other fibers within the web.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add heat activatable fibers as taught by Thompson '081 within the web as taught by Butin in order to bond the heat activatable fibers with each other and the other fibers within the web because it would provide a source area and a receiving area such that a major face of the insulation web intercepts and thereby significantly attenuates sound waves passing from the source area to the receiving area (see Thompson '081 col. 1. lines 55-63).

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butin et al. (US Patent No. 3,849,241) in view of Thompson et al. '322 (US Patent No. 5,958,322).

With respect to Claim 5, Butin teaches making melt blown non-woven webs by extruding PET resin with about 0.6 to about 1.4 i.v., which reads on the claimed range of about 0.45-0.6 i.v. given the range implied by "about," at a temperature of 550 F (288 C), which is less than about 285 C given the range implied by "about", with a stream of air at 500 F (260 C), which reads on the claimed range of less than about 270 C, delivered at a sonic velocity level, which is greater than 100 meters per second, to make fibers of 0.5 to 5 microns (micrometers) diameter, which is within the claimed range of an average diameter of about 20 micrometers or less, and collecting the filaments into a mat (see abstract; see col. 2, lines 43-58; col. 4, lines 31-45; col. 7, lines 59-64; col. 9, lines 20-23; and col. 19, lines 30-37).

Butin teaches that self-bonding can occur via various processes (see col. 19, lines 33-37) but does not explicitly teach passing the web through an oven.

Thompson '322 teaches annealing a non-woven while restrained through an oven (see abstract and col. 11, lines 53-58). As the temperature is sufficiently high to thermally bond the fibers together, the fibers would necessarily thermally bond together—autogenously bonded.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to pass a nonwoven through an oven as taught by Thompson '322

utilizing the web as taught by Butin in order to form a dimensionally stable nonwoven fibrous web (see Thompson '322 abstract).

With respect to Claim 6, Butin et al. in view of Thompson et al. '322 do not appear to explicitly teach that the extruder temperature is within the claimed range (e.g., less than 275 C). However, in this regard, Butin further teaches the total degradation is a function of the pre-extruder temperature, extruder temperature, airflow, and air temperature. As such, Butin obvious recognizes that extruder temperature is a result-effective variable. Since the extruder temperature would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum the extruder temperature applied in the process of Butin et al. in view of Thompson et al. '322 through routine experimentation based upon total desired thermal degradation and its related viscosity.

With respect to Claim 7, Butin teaches that the speed of the air is at sonic velocity levels, which is included within the claimed range of at least 150 meters per second (see col. 9, lines 20-23).

With respect to Claim 10, Butin teaches that thermoplastic polymer of the web can include PET and other polymers as a mixture (see col. 4, lines 32-42).

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Butin et al. (US Patent No. 3,849,241) in view of Thompson et al. '322 (US Patent No. 5,958,322) as applied to Claim 5 above, and further in view of Thompson et al. '081 (US Patent No. 5,841,081)

With respect to Claim 8, Butin in view of Thompson et al. '322 teaches making a nonwoven web as previously described.

Butin in view of Thompson et al. '322 does not specifically teach that additional fibers or particles are dispersed among the PET fibers before they are collected.

Thompson '081 teaches a method of making a nonwoven web by adding 15 percent or greater heat activatable staple fibers to the other fibers within the web.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add heat activatable fibers as taught by Thompson '081 within the web as taught by Butin in view of Thompson et al. '322 in order to bond the heat activatable fibers with each other and the other fibers within the web because it would provide a source area and a receiving area such that a major face of the insulation web intercepts and thereby significantly attenuates sound waves passing from the source area to the receiving area (see Thompson '081 col. 1. lines 55-63).

With respect to Claim 9, Thompson '081 teaches that the heat activatable fibers added to the PET fibers are in staple form (see col. 1, lines 66 through col. 2, line 2).

Claims 1-3 are rejected under 35 USC 103(a) as being unpatentable over Butin (US Patent No. 3,849,241) in view of admitted prior art (Application No. 09/716,790, Paper No. 7, 12 December 2002).

Butin teaches making melt blown non-woven webs by extruding PET at a temperature of 550 F (288 C), which is less than about 295 C, with a stream of air at 500 F (260 C), which reads on the claimed range of less than about 260 C given the range implied by "about", delivered at a sonic velocity level, which is greater than 100

meters per second, and collecting the filaments into a mat (see abstract; col. 4, lines 31-45; col. 7, lines 59-64; and col. 9, lines 20-23).

Butin does not expressly disclose that the process makes a PET with a double melting peak.

Admission discloses "meltspun oriented PET fibers that exhibit such characteristics" as a "dual melting peak" "with a second melting peak representative of a molecular portion 'in chain-extended crystalline form and [having a melting point elevated over that of the non-chain-extended crystalline form'" (Application No. 09/716,790, Paper No. 7, 12 December 2002, Page 3, 5th complete paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make Applicant's admittedly known fiber into a web by using Butin's controllable variables within the PET web-making process in order to have a PET web process that successfully makes the known fibers into web at a high polymer throughput (industrial productivity) (see Butin abstract and col. 4, lines 31-45).

With respect to Claim 2, Butin teaches that the extruded resin would have about 0.6 to about 1.4 i.v., which reads on the claimed range of 0.45-0.75 i.v. (see col. 2, lines 43-58).

With respect to Claim 3, while Butin does not detail aspects of the properties of crystallization of the PET, the PET of Butin would necessarily exhibit a double melting peak on a DSC plot which is representative of a first molecular portion within the fiber that comprises a non-chain-extended crystalline phase, and a second molecular portion within the fiber that comprises a chain-extended crystalline phase and melts at an

elevated temperature over that of the non-chain-extended crystalline phase principally because Butin teaches the same process as applicant and per admission by applicant that it is known to make the PET fiber.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butin (US Patent No. 3,849,241) in view of admitted prior art (Application No. 09/716,790, Paper No. 7, 12 December 2002) as applied above to Claim 1, and further in view of Thompson et al. '081 (US Patent No. 5,841,081).

Butin in view of Applicant's admission does not specifically teach that additional fibers or particles are dispersed among the PET fibers before they are collected.

Thompson '081 teaches a method of making a nonwoven web by adding 15 percent or greater heat activatable staple fibers to the other fibers within the web.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add heat activatable fibers as taught by Thompson '081 within the web as taught by Butin in view of Applicant's admission in order to bond the heat activatable fibers with each other and the other fibers within the web because it would provide a source area and a receiving area such that a major face of the insulation web intercepts and thereby significantly attenuates sound waves passing from the source area to the receiving area (see Thompson '081 col. 1. lines 55-63).

Claims 5-7 and 10 are rejected under 35 USC 103(a) was being unpatentable over Butin (US Patent No. 3,849,241) in view of admitted prior art (Application No. 09/716,790, Paper No. 7, 12 December 2002) and Thompson et al. '322 (US Patent No. 5,958,322).

Butin teaches making melt blown non-woven webs by extruding PET resin with about 0.6 to about 1.4 i.v., which reads on the claimed range of about 0.45-0.6 i.v. given the range implied by "about," at a temperature of 550 F (288 C), which is less than about 285 C given the range implied by "about", with a stream of air at 500 F (260 C), which reads on the claimed range of less than about 270 C, delivered at a sonic velocity level, which is greater than 100 meters per second, to make fibers of 0.5 to 5 microns (micrometers) diameter, which is within the claimed range of an average diameter of about 20 micrometers or less, and collecting the filaments into a mat (see abstract; see col. 2, lines 43-58; col. 4, lines 31-45; col. 7, lines 59-64; col. 9, lines 20-23; and col. 19, lines 30-37).

Butin does not expressly disclose a PET with a double melt peak.

Admission discloses "meltspun oriented PET fibers that exhibit such characteristics" as a "dual melting peak" "with a second melting peak representative of a molecular portion 'in chain-extended crystalline form and [having a melting point elevated over that of the non-chain-extended crystalline form'" (Application No. 09/716,790, Paper No. 7, 12 December 2002, Page 3, 5th complete paragraph).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make Applicant's admittedly known fiber into a web by using Butin's controllable variables within the PET web-making process in order to have a PET web process that successfully makes the known fibers into a web at a high polymer throughput (industrial productivity) (see Butin abstract and col. 4, lines 31-45).

Butin in view of Applicant's admission teaches that self-bonding can occur via various processes (see Butin col. 19, lines 33-37) but does not explicitly teach passing the web through an oven.

Thompson '322 teaches annealing a non-woven while restrained through an oven (see abstract and col. 11, lines 53-58). As the temperature is sufficiently high to thermally bond the fibers together, the fibers would necessarily thermally bond together—autogenously bonded.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to pass a nonwoven through an oven as taught by Thompson '322 utilizing the web as taught by Butin in view of Applicant's admission in order to form a dimensionally stable nonwoven fibrous web (see Thompson '322 abstract).

With respect to Claim 6, Butin in view of Applicant's admission and Thompson et al. '322 do not appear to explicitly teach that the extruder temperature is within the claimed range (e.g., less than 275 C). However, in this regard, Butin further teaches the total degradation is a function of the pre-extruder temperature, extruder temperature, airflow, and air temperature. As such, Butin obvious recognizes that extruder temperature is a result-effective variable. Since the extruder temperature would be a result-effective variable, one of ordinary skill in the art would have obviously determined the optimum the extruder temperature applied in the process of Butin in view of Applicant's admission and Thompson et al. '322 through routine experimentation based upon total desired thermal degradation and its related viscosity.

With respect to Claim 7, Butin teaches that the speed of the air is at sonic velocity levels, which is included within the claimed range of at least 150 meters per second (see col. 9, lines 20-23).

With respect to Claim 10, Butin teaches that thermoplastic polymer of the web can include PET and other polymers as a mixture (see col. 4, lines 32-42).

Claims 8 and 9 are rejected under 35 USC 103(a) was being unpatentable over Butin (US Patent No. 3,849,241) in view of admitted prior art (Application No. 09/716,790, Paper No. 7, 12 December 2002) and Thompson et al. '322 (US Patent No. 5,958,322) as applied to Claim 5 above, and further in view of Thompson et al. '081 (US Patent No. 5,841,081)

With respect to Claim 8, Butin in view of Applicant's admission and Thompson et al. '322 teaches making a nonwoven web as previously described.

Butin in view of Applicant's admission and Thompson et al. '322 does not specifically teach that additional fibers or particles are dispersed among the PET fibers before they are collected.

Thompson '081 teaches a method of making a nonwoven web by adding 15 percent or greater heat activatable staple fibers to the other fibers within the web.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add heat activatable fibers as taught by Thompson '081 within the web as taught by Butin in view of Applicant's admission and Thompson et al. '322 in order to bond the heat activatable fibers with each other and the other fibers within the web because it would provide a source area and a receiving area such that a major face

of the insulation web intercepts and thereby significantly attenuates sound waves passing from the source area to the receiving area (see Thompson '081 col. 1. lines 55-63).

With respect to Claim 9, Thompson '081 teaches that the heat activatable fibers added to the PET fibers are in staple form (see col. 1, lines 66 through col. 2, line 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is 571-272-8517. The examiner can normally be reached on Monday through Friday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on 571-272-1196. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Butler
Assistant Examiner
Art Unit 1732

MICHAEL P. COLAIANNI
SUPERVISORY PATENT EXAMINER